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## cDNA

polyadenylation signal

Fig. 1

GGCATGT (A) 18+

# MAT II $\beta$ Protein Subunit Sequence

## cDNA

```

-60 CGTCGATCCTGGGTTGGAGAGGTGGCGGCCGCTGAGGCTGGCGGTGAAGACGGCGGGC -1
(1) M V G R E K E I S I H F V P G S C R L V E E E V N I P N R R V L V (33)
+1 ATGGTGGCGGGAGAAATCTCTATACACTTTGTTCGGGAGCTGTGGCTGGTGGAGGAGAAATTAACATCCCTAATAGGAGGTTCTGGTT 99
(34) T G A T G L L G R A V H K E F Q Q N N W H A V G C G F R R A R P K (66)
100 ACTGGTGCACCTGGGCTTCTTGGCAGAGCTGTACACAAAGAATTTTCAGCAGAAATATTTGGCATGCAGTTGGCTGTGGTTTTCAGAGAGCAAGACCAAAA 198
(67) F E Q V N L L D S N A V H H I I H D F Q P H V I V H C A A E R R P (99)
199 TTTGAACAGGTTAATCTGTTGATTCTAATGCAGTTCATCAGTTCATGATTTTCAGCCCCCATGTTATATAGTACATTGTGCAGCAGAGAGAGACCA 297
(100) D V V E N Q P D A A S Q L N V D A S G N L A K E A A A V G A F L I (132)
298 GATGTTGTAGAAAATCAGCCAGATGCTGCCTCTCAACTTAATGTGGATGCTTCTGGGAATTTAGCAAGGAAGCAGCTGCTGTTGGAGCATTTTCTCATC 396
(133) Y I S S D Y V F D G T N P P Y R E E D I P A P L N L Y G K T K L D (165)
397 TACATTAGCTCAGATTATGTTATTTGATGGAACAAATCCACCTTACAGAGAGGAACATACCAGTCCCTAAATTTGTATGGCAAAACAAAATTAGAT 495
(166) G E K A V L E N N L G A A V L R I P I L Y G E V E K L E E S A V T (198)
496 GGAGAAAAGGCTGTCTCGAGAACAAATCTAGGAGCTGTGTTTGGAGATTCTTCTGTATGGGAAGTTGAAAAGCTCGAAGAAAAGTGTCTGTGACT 594
(199) V M F D K V Q F S N K S A N M D H W Q Q R F P T H V K D V A T V C (231)
595 GTTATGTTGATAAAGTGAGTTTCAGCAACAAGTCAGCAACAATGGATCACTGGCAGCAGAGGTTTCCCCACACATCTCAAAGATGTGGCCACTGTGTGC 693
(232) R Q L A E K R M L D P S I K G T F H W S G N E Q M T K Y E M A C A (264)
694 CGGCAGCTAGCAGAGAGAGATGCTGGATCCATCAATTAAGGGAACCTTTCACTGTCTGGCAATGAACAGATGACTAAGTATGAATGGCATGTGCA 792
(265) I A D A F N L P S S H L R P I T D S P V L G A Q R P R N A Q L D C (297)
793 ATTGCAGATGCCTTCAACCTCCCGCAGCTCACTTAAGACCTATTACTGACAGCCCTGTCTTAGGAGCACAAACGTCGAGAAATGCTCAGCTTGACTGC 891
(298) S K L E T L G I G Q R T P F R I G I K E S L W P F L I D K R W R Q (330)
892 TCCAAATTGGAGACCTTGGGCATTGGCCAACGAACACCACTTTCGAATTGGAATCAAAGAATCACTTTGGCCTTTCCTCATTGACAAGAGATGGAGACAA 990
(331) T V F H Ter (334)
991 ACGGCTTTTCATTAGTCTATTGTTGGGTTCTTTTTTTTAAATGAAAAGTATAGTATGTGGCACTTTTTTAAAGAACAAAGGAAATAGTTTTGTAT 1089
1090 GAGTACTTTAATTTGACTCTTAGGATCTTTAGTAAATGATGCTCTTGCACTAGTGAATGTCTAAAGAACTAAAGGCAGTCAATGCCCTGTTTG 1189
1189 CAGTAATTTTCTTTTATCATTTTGTCTGGCTAACTTGGAGTTTGGATATAGTAAATATGATCCTTAAATATTGAGAGTCAAGATGAAGC 1288
1288 AGACCTGTGTAGACTTTTCAGATGAAATTTTCATCTCGTAACCTCCATATTTTCAGGATTTTGAAGCTGTGACCTTTTCACTTTTCACTTTTAT 1387
1387 AATTGTGTGAATAGTATAAAATCATTTGGTGTACATTTATTTGGTTTGGCTGAGCTCAGATCAAAATGTTTGAAGAAAGAACTTTTATTTTGAAGTT 1486
1486 ACGTACAGTTTTTATGCTTGAGATATTTCAACATGTTATGATATTTGAACTTCTACAGCTTGATGCCCTCTGCTTTTATAGCAGTTTTATGGGGAGCAC 1585
1585 TTGAAGAGCGGTGTACATGATTTTTTTTCTAGGCAACATGGAATGCAACGTTGATTTTTTAAATATAATATAACTGTCTCTTTTCATCCCCAT 1684
1684 GTTGGCGCTAAGTATTTTCATATGTGTGGTTATCTACTATAATAATGGGCTTGTAAAGCCTTTTCACCATTCATGAATAATAATAATATGTACTGCT 1783
GGCATGT (A) 18+

```

polyadenylation signal

FIG. 2

# MAT II $\beta$ Protein Subunit Sequence

cDNA

```

-60 CGTCGATCCTGGGTTGGAGGAGGTGGCGGCCGCTGAGGCTGCGCGGTGAAGACGGCGGGC -1
(1) M V G R E K E L S I H F V P G S C R L V E E E V N I P N R R V I V (33)
+1 ATGGTGGGGGGGAGAAAGAACTGTCTATACACTTTGTTCCCGGAGCTGTCGGCTGGTGGAGGAGAAAGTTAAACATCCCTAATAGGAGGGTTATCGTT 99
(34) T G A T G L L G R A V H K E F Q Q N N W H A V G C G F R R A R P K (66)
100 ACTGTCACCACTGGGCTTCTGGCAGAGCTGTACACAAAGAAATTCAGCAGATAATTTGGCATGAGTTGGCTGTGGTTTCAGAAGAGCAAGACCAAAA 198
(67) F E Q V N L L D S N A V H H I I H D F Q P H V I V H C A A E R R P (99)
199 TTTGAACAGGTTAATCTGTTGGATTCTAATGCAGTTTCATCATCTTTCAGCCCCATGTTATAGTACATTGTGCAGCAGAGAGAACCA 297
(100) D V V E N Q P D A A S Q L N V D A S G N L A K E A A A V G A F L I (132)
298 GATGTTGTAGAAATCAGCCAGATGCTGCCTCTCAACTTAATGTGGATGCTTCTGGGAATTTAGCAAAAGGAAGCAGCTGCTGTTGGAGCATTTTCTCATC 396
(133) Y I S S D Y V F D G T N P P Y R E E D I P A P L N L Y G K T K L D (165)
397 TACATTAGCTCAGATTATGTTGATGGAACAAATCCACCTTACAGAGAGGAACACATACCAGCTCCCTCAAATTTGTATGCAAAACANAATTAGAT 495
(166) G E K A V L E N N L G A A V L R I P I L Y G E V E K L E E S A V T (198)
496 GGAGAAAGGCTGTCTCGGAGAACAACTAGGAGCTGCTGTTTGGAGATTCTTATGTTGGGAAGTTGAAAGCTCGAAGAAAGTGTGTGACT 594
(199) V M F D K V Q F S N K S A N M D H W Q Q R F P T H V K D V A T V C (231)
595 GTTATGTTGATAAAGTGCAGTTCAGCAACAAGTCAGCAACAATGGATCACTGGCAGCAGAGGTTCCCCACACATGTCAAAGATGTGGCCACTGTGTGC 693
(232) R Q L A E K R M L D P S I K G T F H W S G N E Q M T K Y E M A C A (264)
694 CGGCAGCTAGCAGAGAGAGATGCTGGATCCATCAATTAAGGGAACCTTTTCACTGGTCTGGCAATGAACAGATGACTAAGTATGAAATGGCATGTGCA 792
(265) I A D A F N L P S S H L R P I T D S P V L G A Q R P R N A Q L D C (297)
793 ATTCAGATGCCTTCAACCTCCCCAGCAGTCACTTAAGACCTATTACTGACAGCCCTGTCTAGAGCACAACGTCGAGAAATGCTCAGCTTGACTGC 891
(298) S K L E T L G I G Q R T P F R I G I K E S L W P F L I D K R W R Q (330)
892 TCCAAATTGGAGACCTTGGCAATTGGCCAACGAACACCAATTTTGAATGGAATCAAAGAAATCACTTTTGGCCCTTTCCTCAATTGACAAGAGATGGAGACAA 990
(331) T V F H Ter (334)
991 ACGTCTTTTCATTAGTCTATTGTTGGGTTCTTTTTTTTAAATGAAAAGTATAGTATGTGGCACTTTTAAAGAACAAAGGAAATAGTTTGTAT 1089
1090 GAGTACTTTAATGTGACTCTTAGGATCTTTCAGGTAAATGATGCTCTTGCACTAGTGAATGTCTAAGAAACTAAAGGCAGTCAATGCCCTGTTTG
1189 CAGTAATTTTTCTTTTATCATTTTGTCTGCTGCTAACTGGAGTTGAGTATAGTAATATGATCCTTAAATATTGAGAGTCAGGATGAAGC
1288 AGACCTGCTGAGACTTTTCAGATGAAATTTTCATCTCGTAACCTCCATATTTTCAGGATTTTGAAGCTGTGACCTTTTCATGTTGATTATTTTA
1387 AATTGTGGAATAGTATAAAATCATTGGTGACATTATTGCTTTGCTGAGCTCAGATCAAAATGTTGAAGAAAGGAACCTTTATTTTGGCAAGTT
1486 ACGTACAGTTTATGCTTGAGATATTTCAACATGTTATGATATTTGGAACTTCTACAGCTTGATGCCCTGCTTTTATAGCAGTTTATGCGGAGCAC
1585 TTGAAGAGCGTGTACATGATTTTTTTTCTAGGCAACATTTGAATGCAACGTTGATTTTTTTTAAATATAAATATAACTGTCCCTTTTCATCCCAT
1684 GTTCCCGCTAAGTGATATTTTCATATGTGTGTTTACTCTAATAATGAGCCTTTTTCACCATTTCATGAATAATAAATATGTAAGTACTGCT
1783 GGCATGT (A) 18+

```

polyadenylation signal

FIG. 3



# MAT II $\beta$ Protein Subunit Sequence

## cDNA

```

-60 CGTCGATCCTGGGTTGGAGGAGGTGGCGGCCGCTGAGGCTGCGGCGTGAAGACGGCGGGC -1
(1) M V G R E K E L S I H F V P G S C R L V E E E V N I P N R R V L V (33)
+1 ATGGTGGCGGAGAAAGAACTGTCTATACACTTTGTTCCGGGAGCTGTCGGCTGGTGAGGAGGAAGTTAACATCCCTAATAGGAGGTTCTGGTT 99
(34) T G A T G L L G R A V H K E F Q Q N N W H A V G C G F R R A R P K (66)
100 ACTGGTCCCACTGGGCTTCTGGCAGAGCTGTACACAAAGAATTTTCAGCAGAATAATTGGCATGCAGTTGGCTGTGGTTTCAGAAGAGCAAGACCAAAA 198
(67) F E Q V N L L D S N A V H H I I H D F Q P H V I V H C A A E R R P (99)
199 TTTGAACAGGTTAATCTGTGGATTCTAATGCAGTTTCATCACATCATTCATGATTTTCAGCCCCCATGTTATAGTACATTTGTCAGCAGAGAGAAGACCA 297
(100) D V V E N Q P D A A S Q L N V D A S G N L A K E A A A V G A F L I (132)
298 GATGTTGTAGAAAATCAGCCAGATGCTGCCTCTCAACTTAATGTGGATGCTTCTGGGAATTTAGCAAAAGGAAGCAGCTGCTGTTGGAGCATTTCTCATC 396
(133) Y I S S D Y V F D G T N P P Y R E E D I P A P L N L Y G K T K L D (165)
397 TACATTAGCTCAGATTATGATTTGATGGAACAAATCCACCTTACAGAGGAAGACATACCAGCTCCCTAAATTTGTATGGCAAAACAAATTTAGAT 495
(166) G E K A V L E N N L G A A V L R I P I L Y G E V E K L E S A V T (198)
496 GGAGAAAAGGCTGCTGGAGAACAACTAGGAGCTGCTGTTTGGAGGATTCCTATTCTGTATGGGAAGTTGAAAAGCTCGAAGAAAGTGTGTGACT 594
(199) V M F D K V Q F S N K S A N M D H W Q Q R F P T H V K D V A T V C (231)
595 GTTATGTTGATAAAGTGCAGTTTCAGCAACAGTCAGCAACATGGATCACTGGCAGCAGAGGTTCCCCACACATGTCAAAGATGTGGCCACTGTGTGC 693
(232) R Q L A E K R M L D P S I K G T F H W S G N E Q M T K Y E M A C A (264)
694 CGGCAGCTAGCAGAGAAGAGAATGCTGGATCCATCAATTAAGGGAACCTTTCAGTGGTGGCAATGAACAGATGACTAAGTATGAAATGGCATGTGCA 792
(265) I A D A F N I P S S H L R P I T D S P V L G A Q R P R N A Q L D C (297)
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(298) S K L E T L G I G Q R T P F R I G I K E S L W P F L I D K R W R Q (330)
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(331) T V F H Ter (334)
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1090 GAGTACTTTAATTGTGACTCTTAGGATCTTTTCAGGTAAATGATGCTCTTGCACTAGTGAATTTGTCTAAAGAACTAAAGGGCAGTTCATGCCCTGTTG 1090
1189 CAGTAATTTTCTTTTATCATTTTGTCTGGCTAAACCTTGGAGTTTGAGTATAGTAAATATGATCCCTAAATATTTGAGAGTCAGGATGAAGC 1189
1288 AGACCTGCTGAGACTTTTCAGATGAAATTTTCATCTCGTAACCTCCATTTTTCAGGATTTTGAAGCTGTTGACCTTTTCATGTTGATTTTAA 1288
1387 AATTGTGAAATAGATATAAAATCATTTGGTGATACATTTATTTGCTTGGCTGAGCTCAGATCAAAATGTTTGAAGAAAGGAAGCTTTATTTTGGCAAGTT 1387
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1585 TTGAAGAGCGGTGTGATGATTTTTTTTCTAGGCAACATTTGAATGCAACGCTGATTTTTTAAATATAATATATACTGTCCTTTTCATCCCAT 1585
1684 GTTGCCGCTAAGTGATATTTTCATATGTGTGTTTACTCATATAATGAGCCCTTTTGAAGCCCTTTTCACCATTCAATGAATAATAAATATGACTGCT 1684
1783 GGCATGT (A) 18+

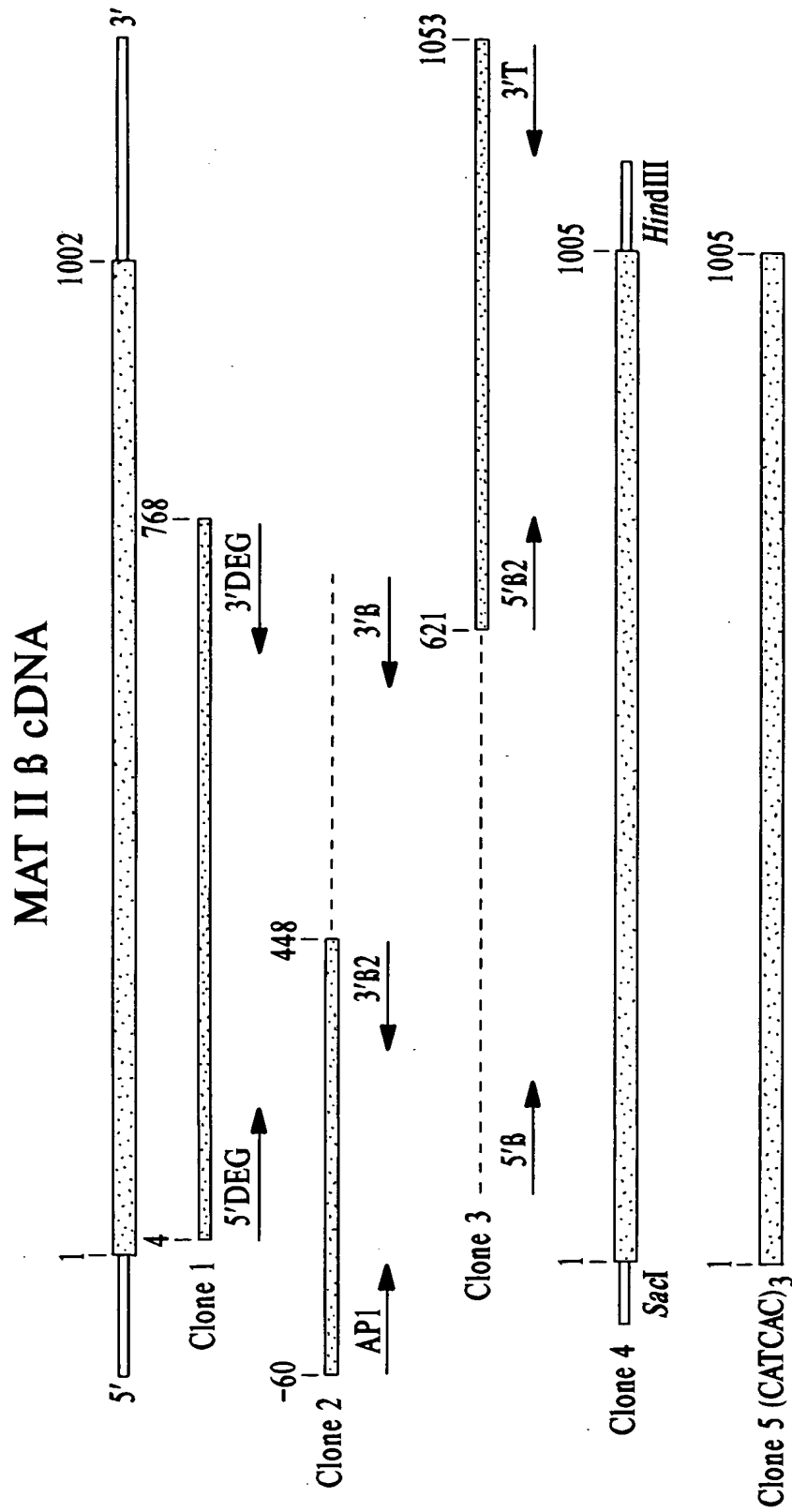
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polyadenylation signal

FIG. 5

tttgcaaaaag	aaactccagg	attcttgaca	gaaagttggt	gggttttgggt	tttggttttg	60
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atgaaacttc	tattgggta	ttttcgagac	tactacggg	aatcagctac	cagctttact	180
gccatgtgga	gaactgcacg	agattccggg	attggaatca	aaatgcta	ttaaaagggtc	240
aagtgaagct	gctcctcacg	ttttggcggtg	cctgcgctct	ctgcaggcag	aagcgaacaa	300
agaccagca	agagaaggca	gaggctaaga	cccatcccg	atctgctctc	ctgaaataat	360
tctggagtca	tgcttgaaat	gccagaggac	atggagcagg	taagaactag	caattcaaga	420
aatgaagcat	tctagagtaa	gagatgcttt	aaaagcattc	cagtgaacgc	ctgctaaaaac	480
cagaattggt	gtgtaaagaa	aatagaaacg	gggtgcattc	atttccttaa	aacataacct	540
cgggacatgg	aagaataagc	caacttttagt	tactgaccgc	gagaaccagg	ttatgaagg	600
ctcagctaag	tctcactagc	tgacaataca	gaattgcact	tgcatttacc	attttaaatg	660
caattatgta	tataaagttt	ctacataaat	aaggatttta	tctgtagtgt	gttccttcc	720
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ggcagcggaa	gccggaagcg	gcgagcgggg	tcgttctggg	cctaggggag	gcgggcccag	2580
ggcgtctgag	ctgaggcccg	cgtcgcacct	gggttgagg	aggtggcggc	cgctgagggt	2640
gcggcgtgaa	gacggcgggc					2660

FIG. 6



**FIG. 7**



cDNA -1  
-60 CGTCGATCCTGGGTTGGAGGAGGTGGCGGCCGCTGAGGCTGGGGCTGAAGACGGCGGGC  
(1) M V G R E K E L S I H F V P G S C R L V E E E V N I P N R R V L V (33)  
+1 ATGGTGGGGCGGAGAAAGAACTGTCTATACACTTGTTCCTGGGAGCTGTCGGCTGGTGGAGGAGGAAGTTAACATCCCTAATAGGAGGTTCTGGTT 99  
(34) T G A T G L L G R A V H K E F Q Q N N W H A V G C G F R R A R P K (66)  
100 ACTGGTGCCACTGGGCTTCTTGGCAGAGCTGTACACAAAGAATTCAGCAGAAATAATTGGCATGCAAGTTGGCTGTGGTTTCAGAAGAGCAAGACCAAAA 198  
(67) F E Q V N L L D S N A V H H I I H D F Q P H V I V H C A A E R R P (99)  
199 TTTGAACAGGTTAATCTGTGGATTCTAATGCAGTTCATCACATCATTCATGATTTTCAGCCCCCATGTTATAGTACATTTGTGCAGCAGAGAGAAGACCA 297  
(100) D V V E N Q P D A A S Q L N V D A S G N L A K E A A V G A F L I (132)  
298 GATGTTGTAGAAAATCAGCCAGATGCTGCCTCTCAACTTAATGTGGATGCTTCTGGGAATTTAGCAAAAGGAAGCAGCTGCTGTTGGAGCATTTCTCATC 396  
(133) Y I S S D Y V F D G T N P P Y R E E D I P A P L N L Y G K T K L D (165)  
397 TACATTAGCTCAGATTATGTATTTGATGGAACAAATCCACCTTACAGAGAGGAAGACATACCAGTCCCTAAATTTGTATGGCAAAACAAAATTAGAT 495  
(166) G E K A V L E N N L G A A V L R I P I L Y G E V E K L E S A V T (198)  
496 GGAGAAAAGGCTGTCTGGAGAACAACTAGGAGCTGCTGTTTGGAGATTCCCTATCTGTATGGGGAAGTTGAAAAGCTCGAAGAAAGTGTGTGACT 594  
(199) V M F D K V Q F S N K S A N M D H W Q Q R F P T H V K D V A T V C (231)  
595 GTTATGTTTGATAAAGTGCAGTTCAGCAACAAGTCAGCAAAACATGGATCACTGGCAGCAGAGGTTCCCCACACATGTCAAAGATGTGGCCACTGTGTGC 693

FIG. 8A

(232) R Q L A E K R M L D P S I K G T F H W S G N E Q M T K Y E M A C A (264)  
694 CGGAGCTAGCAGAGAAGAGATGCTGGATCCATCAATTAAGGAACCTTTTCACTGGTCTGGCAATGAACAGATGACTAAGTATGAATGCAATGGCATGTGCA 792

(265) I A D A F N L P S S H L R P I T D S P V L G A Q R P R N A Q L D C (297)  
793 ATGCAGATGCCTTCAACCTCCCCAGCAGTCACTTAAGACCTATTACTGACAGCCCTGTCTCTAGGAGCACACGTCGAGAAATGCTCAGCTTGACTGC 891

(298) S K L E T L G I G Q R T P F R I G I K E S L W P F L I D K R W R Q (330)  
892 TCCAAATTGGAGACCTTGGGCATTGGCCACGAAACACCATTTTGAATTGGAATCAAAGAATCACTTTGGCCCTTTCCCTCATTGACAAGAGATGGAGACAA 990

(331) T V F H Ter (334)  
991 ACGTCTTTTCATTAGTCTATTGTGTGGGTTCTTTTTTTTAAATGAAAAGTATAGTATGTGGCACTTTTAAAGAACAAAGGAAATAGTTTGTAT 1089  
1090 GAGTACTTTTAATTGTGACTCTTAGGATCTTTTCAGGTAAATGATGCTCTTGCACTAGTGAATTTGTCTAAAGAACTAAAGGCGAGTCATGCCCTGTTTG 1189  
1189 CAGTAAATTTTCTTTTATCATTTTGTGCTGGCTAAACCTTGGAGTTTGAGTATAGTAAATATGATCCTTAAATATTGAGAGTCAGGATGAAGC 1288  
1288 AGACCTGCTGTAGACTTTTCAGATGAAATTTGTTCACTCTCGTAACCTCCATATTTTCAGGATTTTGAAGCTGTTGACCTTTTTCATGTTGATTATTTTA 1387  
1387 AATTGTGAAATAGTATAAAATCAATTGGTGTACATTTATTTGCTTTGCTGAGCTCAGATCAAAATGTTTGAAGAAAGGAACTTTATTTTGGCAAGTT 1486  
1486 ACGTACAGTTTTTATGCTTGAGATATTTCAACATGTTATGTATATTGGAACCTTCTACAGCTTGATGCCCTCTCTGCTTTTATAGCAGTTTATGCGGAGCAC 1585  
1585 TTGAAAGAGCGGTGTACATGTATTTTCTAGGCAAAACATTGAATGCAACCGTGTATTTTAAATATAATATAAATGTCCTTTTTCATCCCAT 1684  
1684 GTTGGCGCTAAGTGATATTTTCATATGTGTGGTTATFACCTCAATAAATGAGCCCTTTTCCACCATTCATGAATAATAAATAATGTTACTGCT 1783  
GGCATGT (A) 18+

polyadenylation signal

FIG. 8B

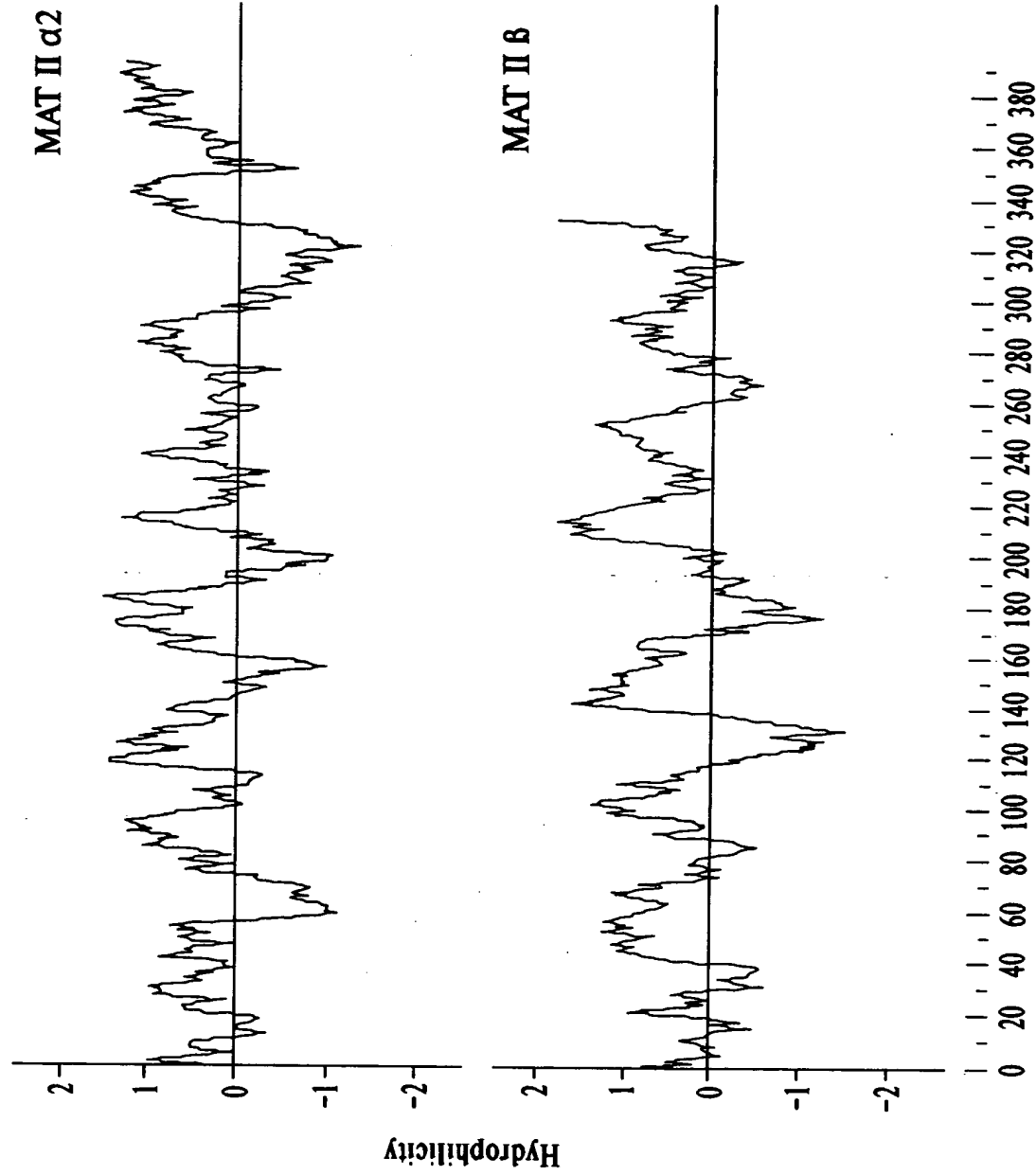


FIG. 9

FIG. 10A

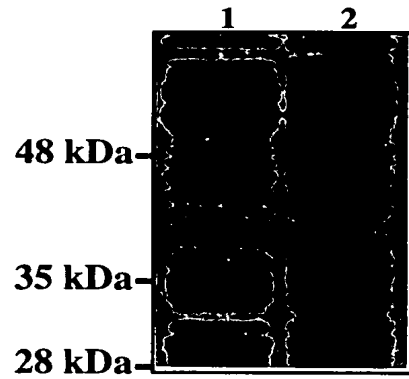


FIG. 10B

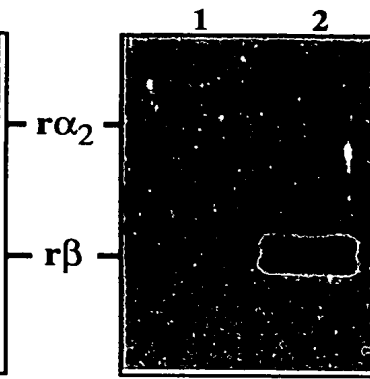


FIG. 10C

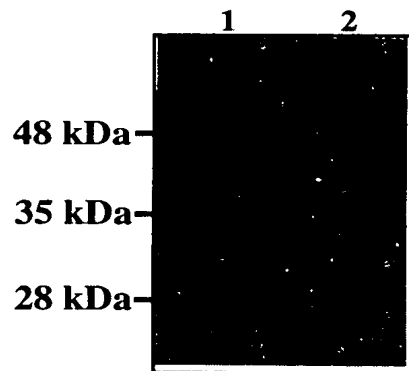


FIG. 10D

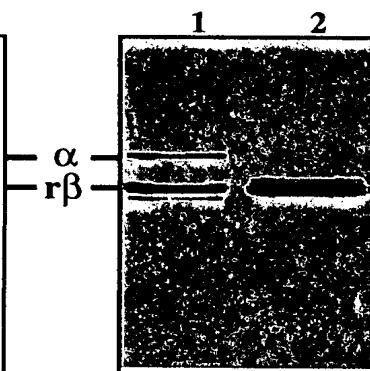


FIG. 11A

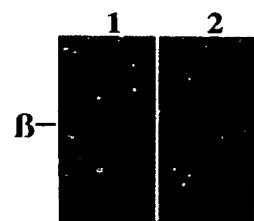
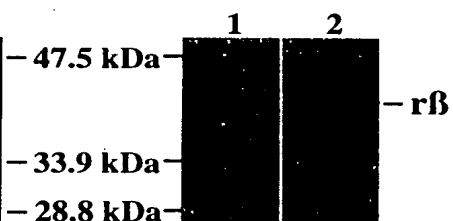


FIG. 11B



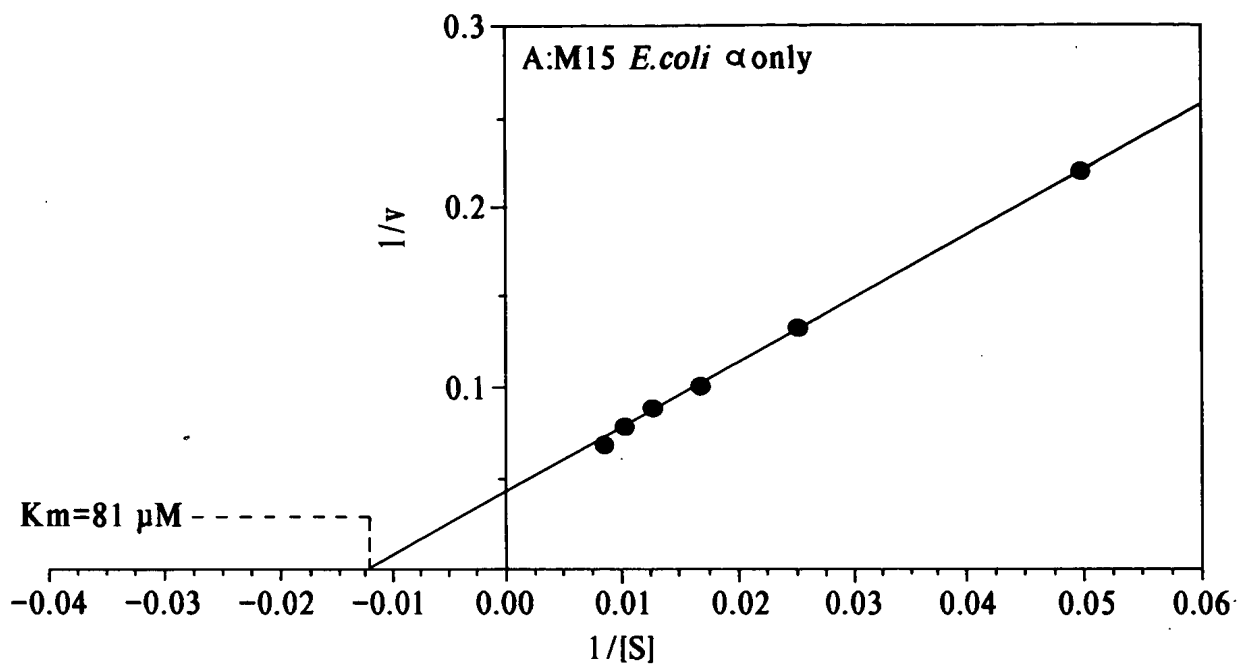


FIG. 12A

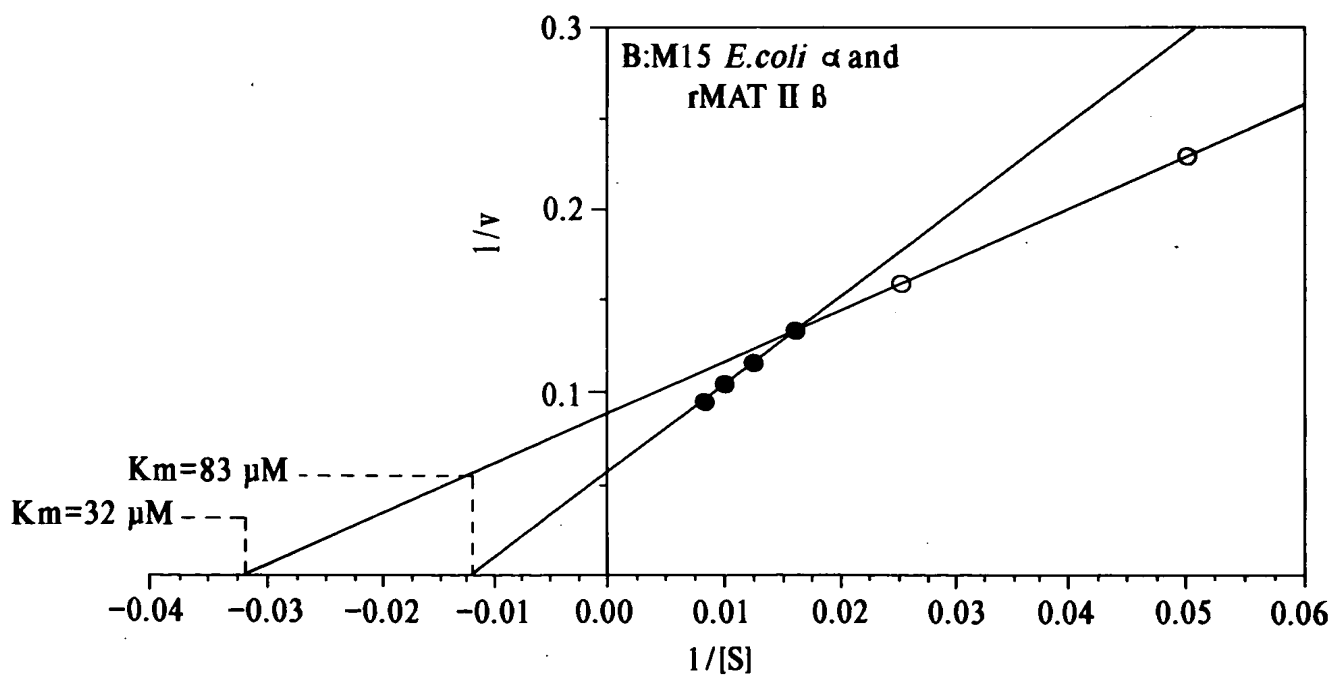


FIG. 12B

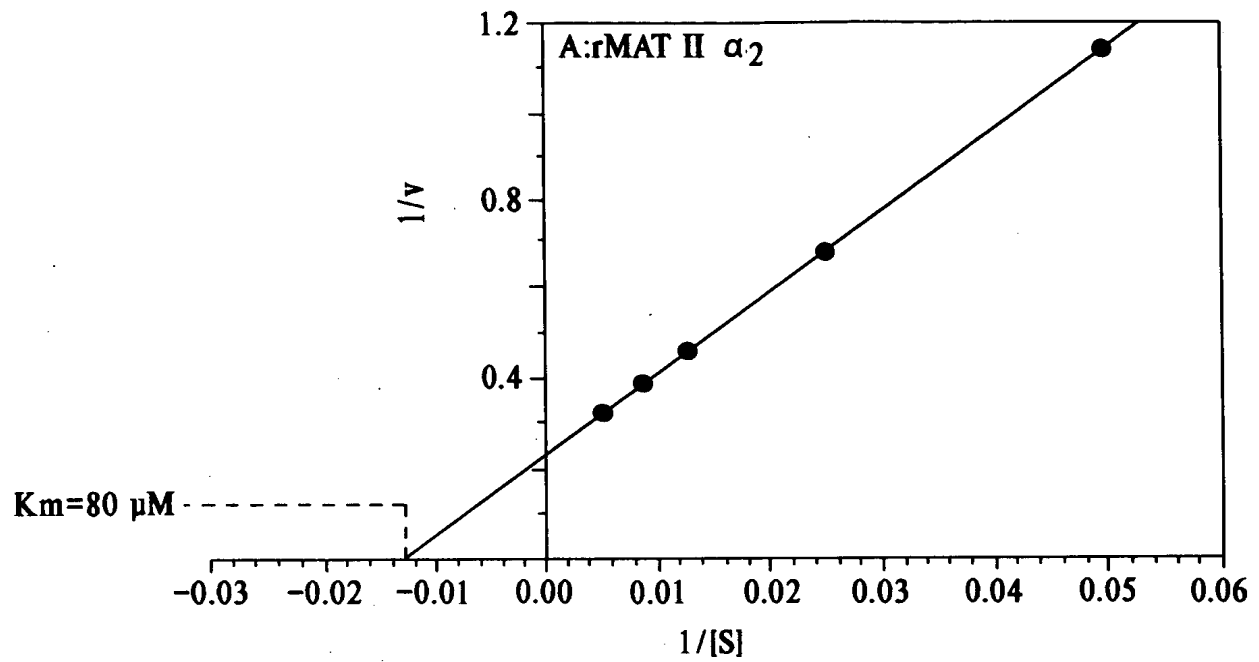


FIG. 12C

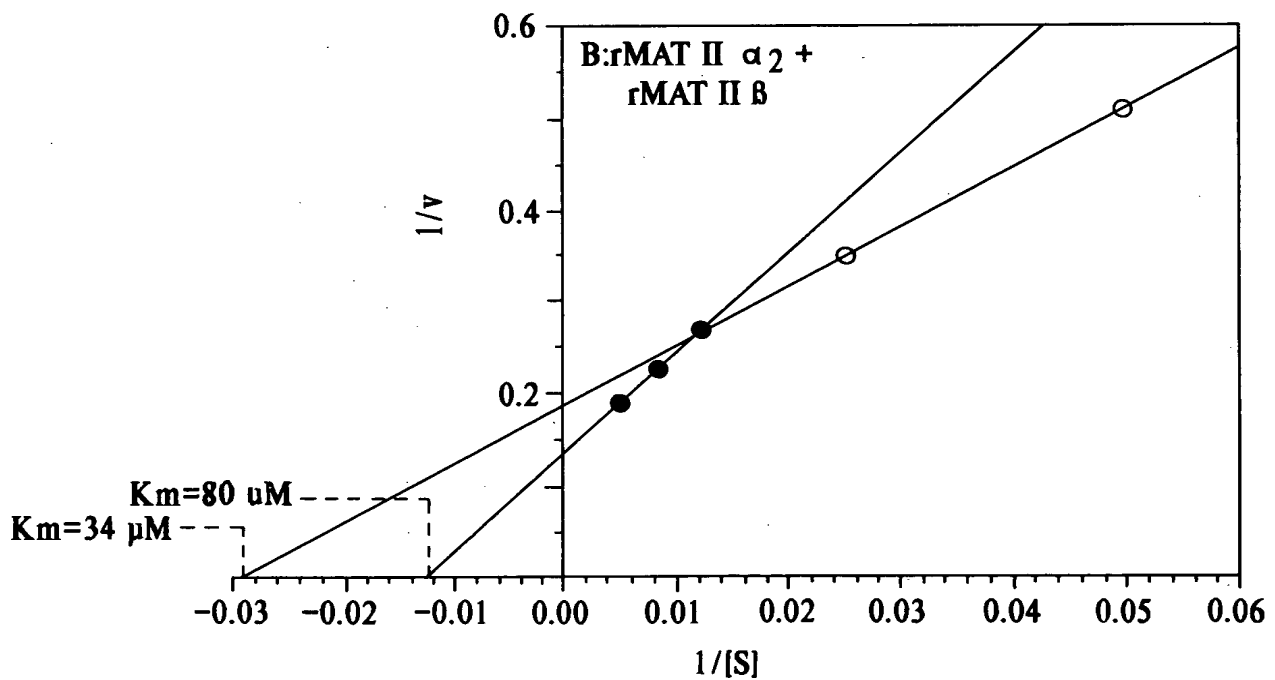


FIG. 12D

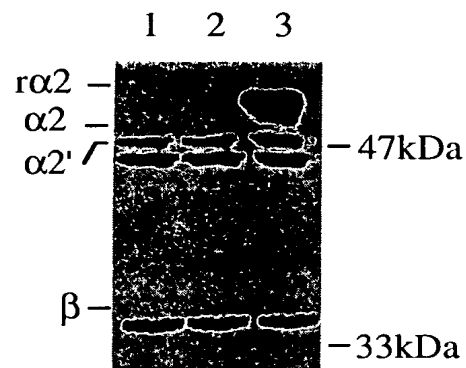


FIG. 13

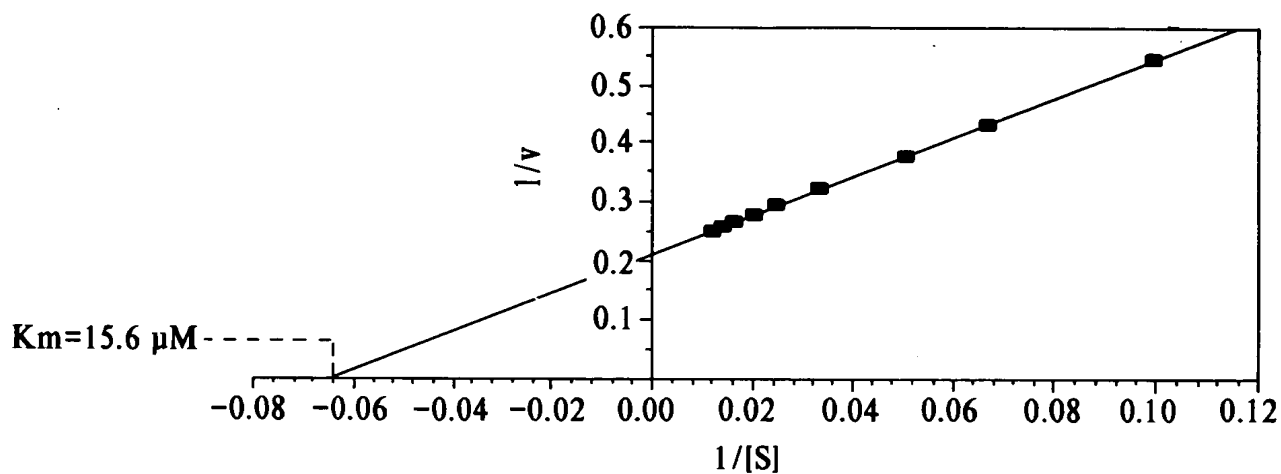


FIG. 14A

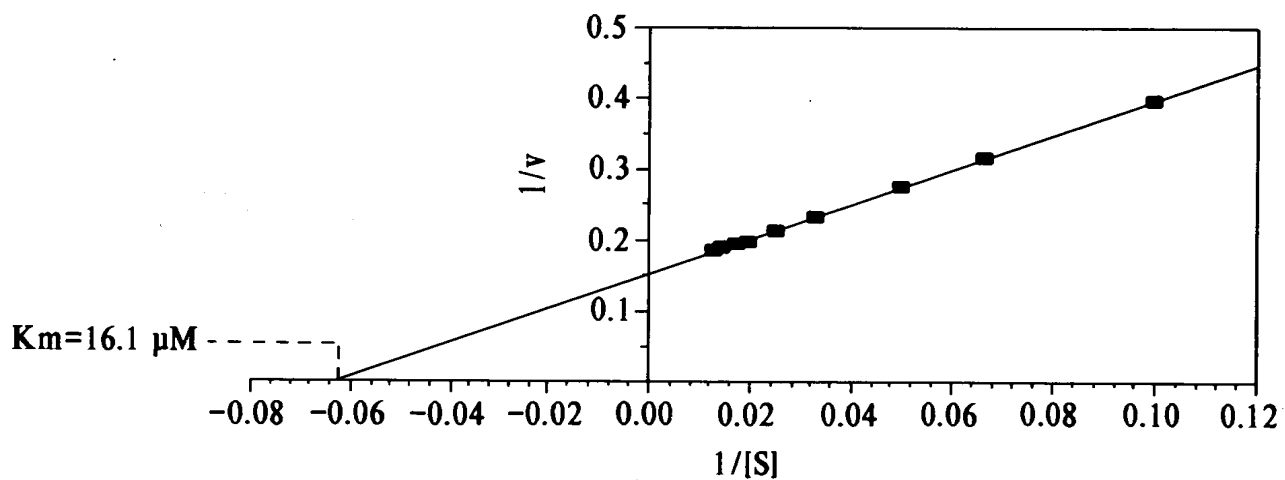


FIG. 14B



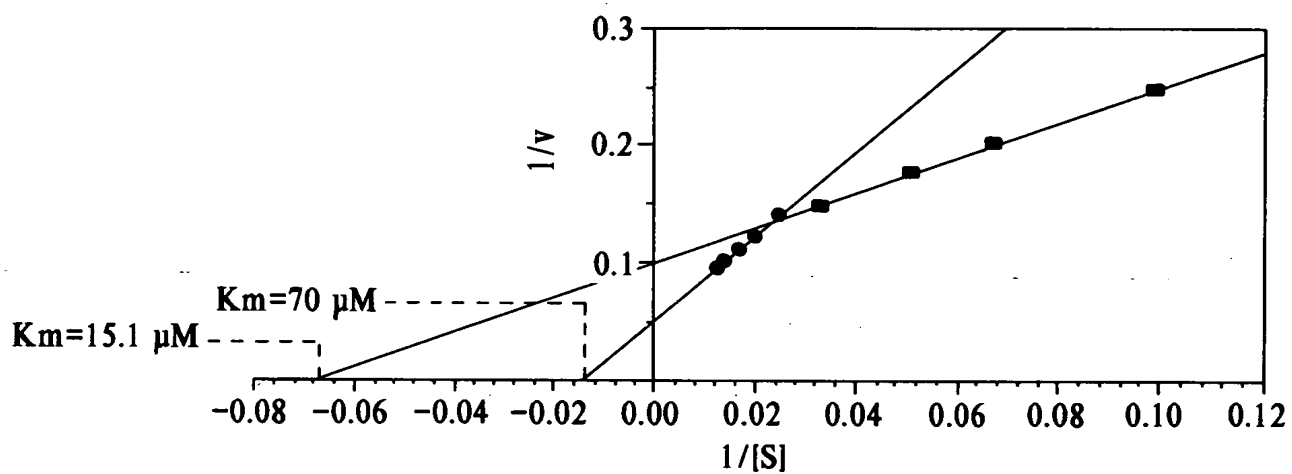


FIG. 14C

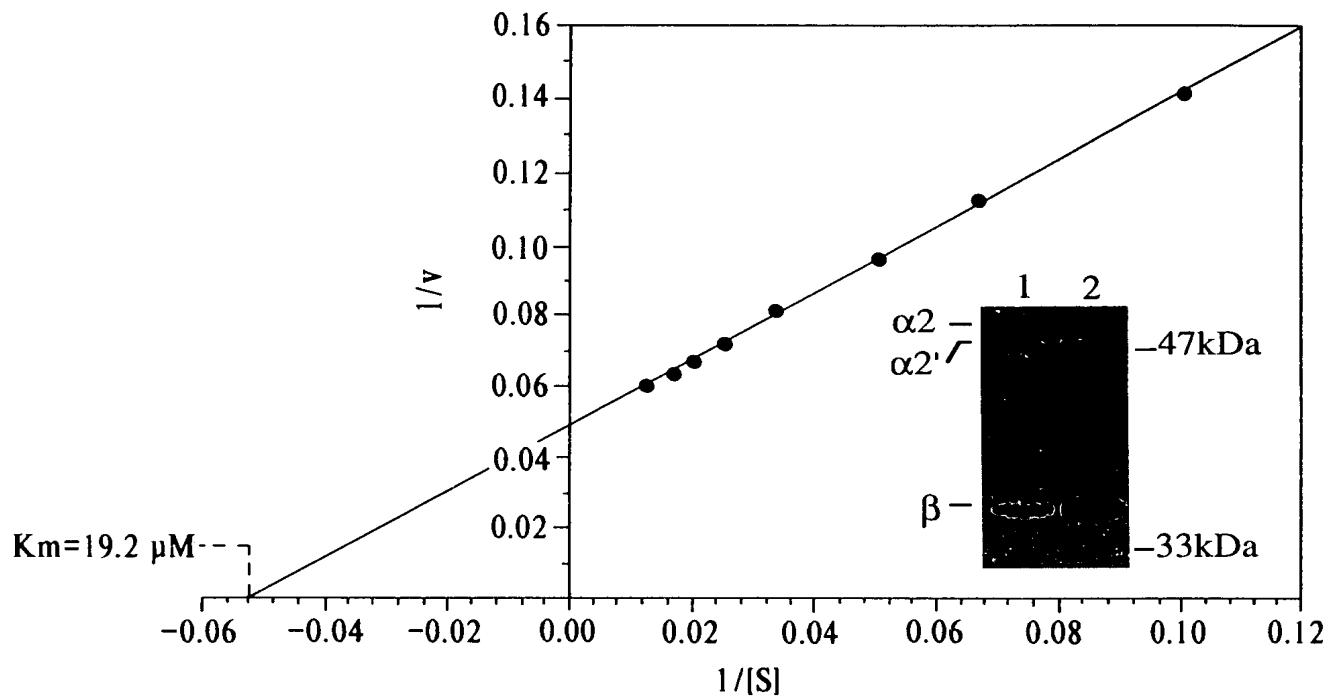


FIG. 15

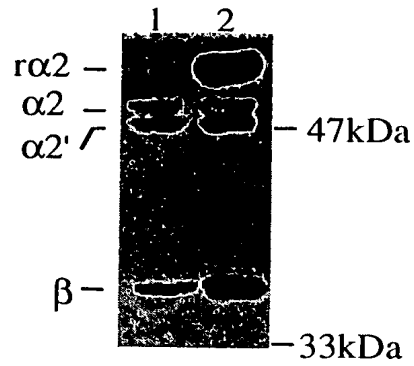


FIG. 16

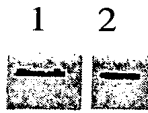


FIG. 17A

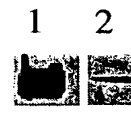


FIG. 17B



FIG. 17C

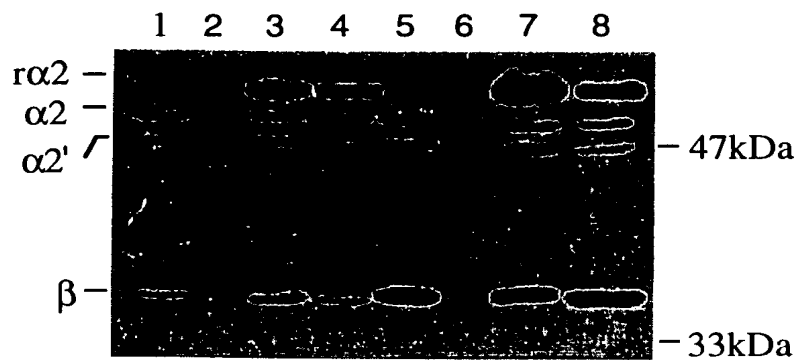


FIG. 18A

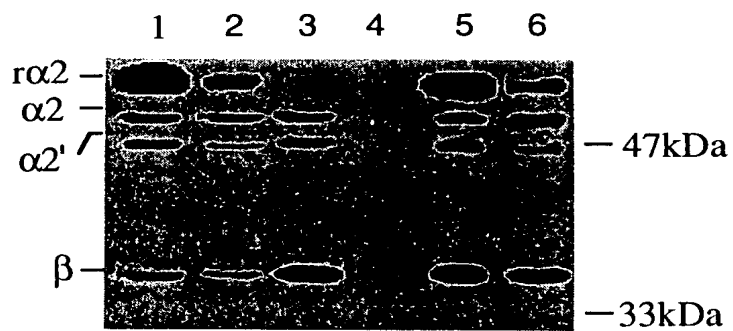


FIG. 18B

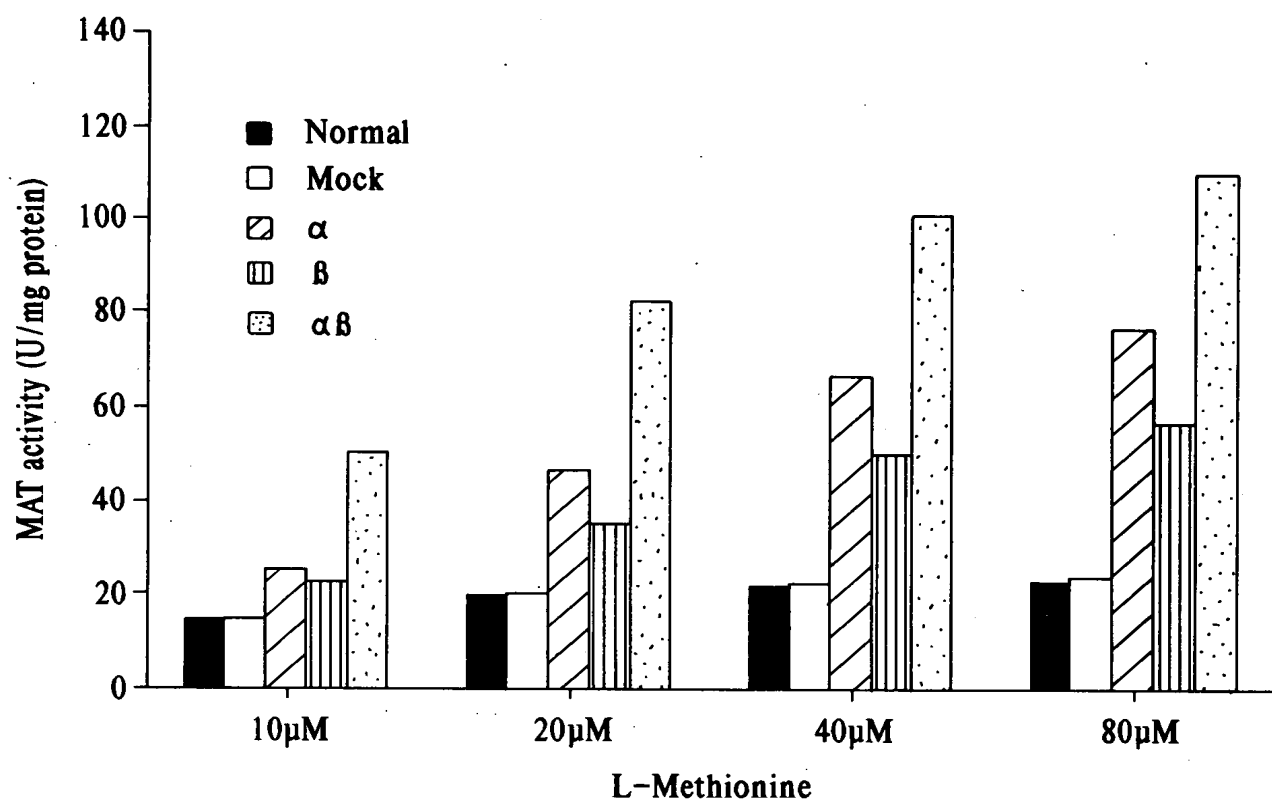


FIG. 19

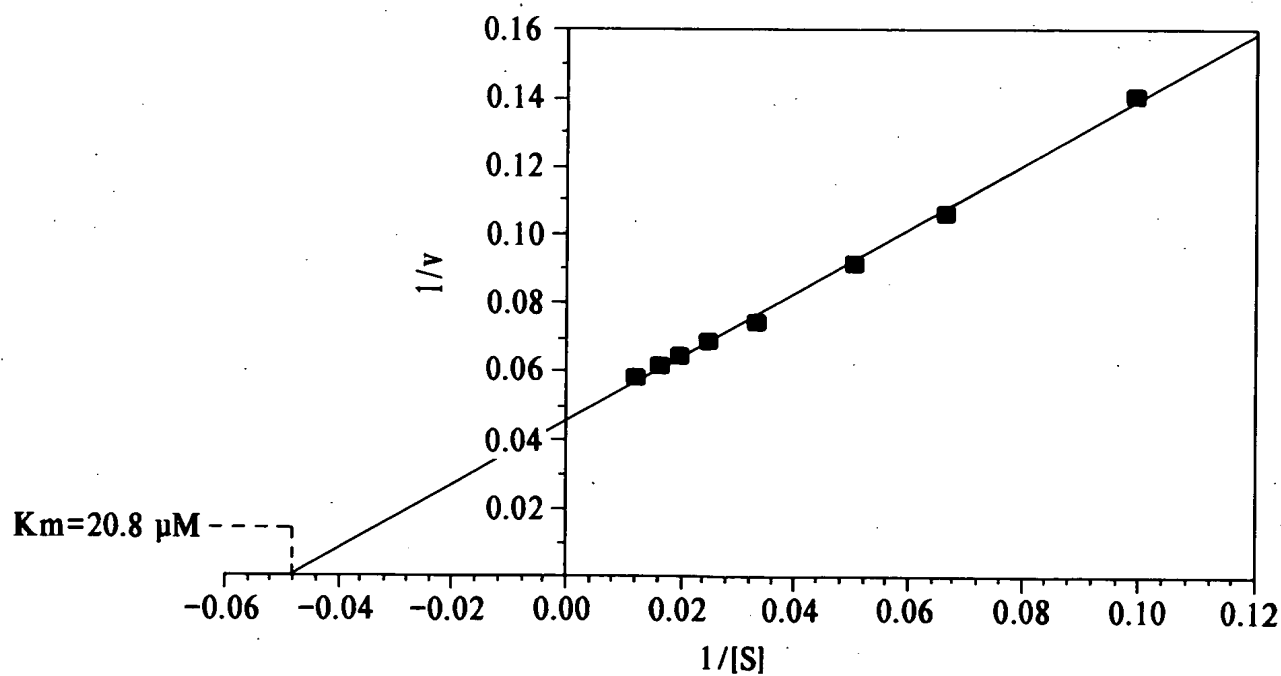


FIG. 20

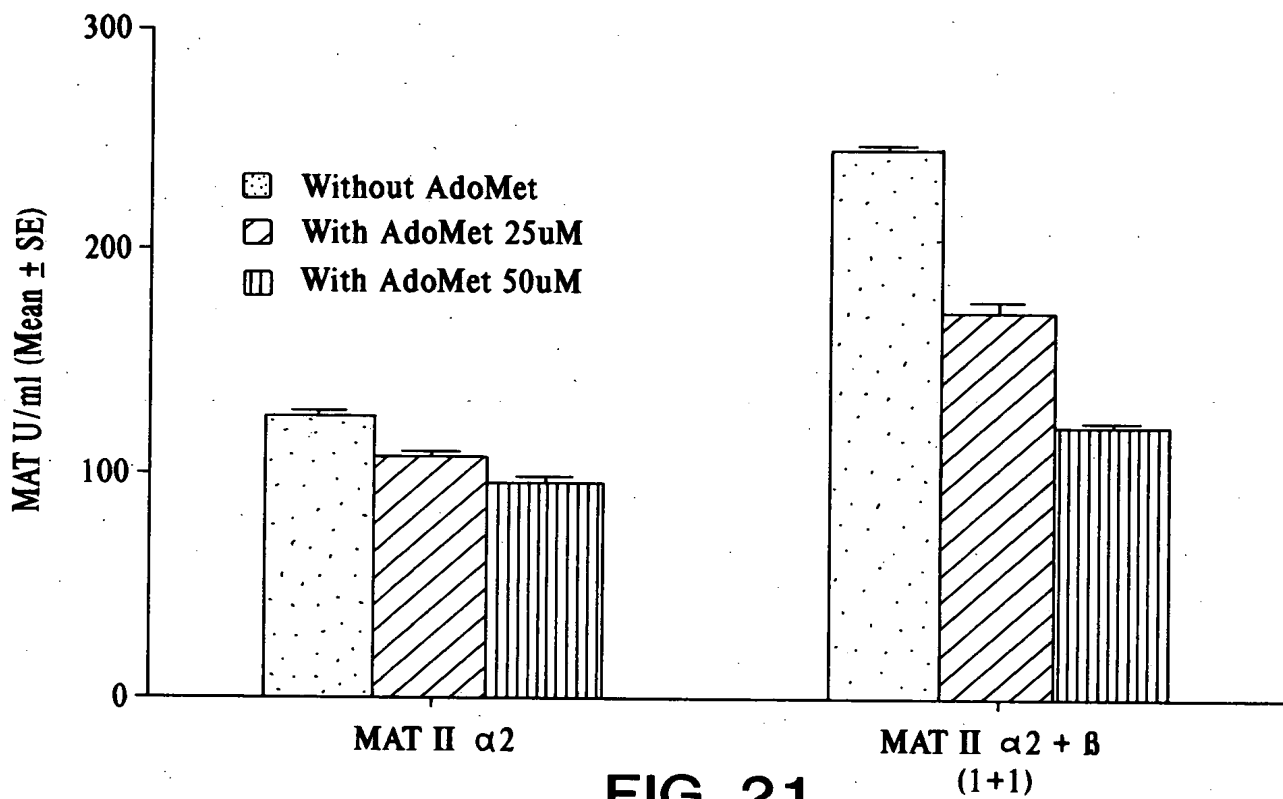


FIG. 21